Amendments to the Claims:

Please amend the claims as follows:

This listing of the claims will replace all prior versions, and listings of the claims in this application.

1. (Currently amended) A radiographic imaging system comprising:

a means for detecting emission radiation emitted by a radioisotope injected into a subject, the detecting means arranged around a circular bore, the bore having an entrance and an exit; ~~and~~

a means for shielding the detecting means from the emission radiation originating outside of the bore, the shielding means including at least one rigid radiation opaque shield rigidly mounted to one of the entrance and the exit of the bore, the shield extending from an outer periphery of the bore toward and surrounding a central axis of the bore and defining a fixed non-circular subject receiving aperture; and

a subject support means that support the subject in the aperture, the subject support means including:

a top surface on which the subject is positioned;

a bottom surface opposing the first surface and having a shape,

a pair of side surfaces opposing each other and each disposed between the bottom and the top surfaces;

wherein at least one shield defines a bottom boundary of the aperture disposed underneath the support means, which bottom boundary conforms to the shape of the bottom surface.

2. (Previously Presented) The imaging system according to claim 1, wherein the aperture of the at least one shield is elliptical.

3. (Previously Presented) The imaging system according to claim 2, wherein the elliptical aperture has a horizontal major axis and a vertical minor axis.

4. (Previously Presented) The imaging system according to claim 3, wherein a ratio of the major axis to the minor axis is or about 7 to 5.

Please cancel claim 5 without prejudice or disclaimer.

Please cancel claim 6 without prejudice or disclaimer.

7. (Currently Amended) The imaging system according to claim ~~6~~1, wherein the subject support means is vertically adjustable and no substantial air gap is defined between the aperture bottom boundary and the bottom surface of the subject support means when the subject support means is in a lower most position.

8. (Currently amended) The imaging system according to claim-~~6~~ 1, wherein each shield defines a top curved boundary of the aperture disposed above the subject support means.

9. (Previously Presented) The imaging system according to claim 8, wherein each shield defines a pair of opposing side boundaries of the aperture , each side boundary disposed between the bottom and top boundaries of the aperture.

10. (Previously Presented) The imaging system according to claim 9, wherein the aperture side boundaries are curved.

11. (Previously Presented) The imaging system according to claim 9, wherein the aperture side boundaries include linear vertical surfaces, which conform to a path of vertical travel of the side surfaces of the subject support means and the subject.

12. (Previously Presented) The imaging system according to claim 11, wherein there is no substantial air gap between each side boundary of the aperture and an associated side surface of the subject support means.

13. (Previously Presented) The imaging system according to claim 11, wherein there is no substantial air gap between side boundaries of the aperture and the subject.

14. (Previously Presented) The imaging system according to claim 9, wherein:

the bottom boundary of the aperture is substantially parallel to the bottom surface of the subject support means, and

each side boundary of the aperture is substantially parallel to an associated side surface of the subject support means.

15. (Original) The imaging system according to claim 1, wherein:

at least one of the shields is a plate of radiation opaque material which is non-movably mounted about the bore.

16. (Previously Presented) The imaging system according to claim 1, wherein the emission radiation detecting means includes a plurality of detectors mounted around the circular bore and further including:

a coincidence detecting means for determining when two of the detectors detect emitted radiation within a preselected temporal window of being simultaneous.

17. (Currently amended) A method of radiographic imaging comprising:

detecting emission radiation emitted by a radioisotope injected into a subject along a detecting means defined around a circularly cylindrical bore; and

shielding the detecting means from the emission radiation originating outside of the bore with at least one shield rigidly mounted to one of an entrance and an exit of the bore and extending from an outer periphery of the bore toward and surrounding a central axis of the bore and defining a fixed non-circular subject receiving aperture that includes inwardly facing first and second side boundaries that face corresponding first and second outwardly facing sides of a subject support that supports the subject in the bore, wherein there is no substantial air gap between each side boundary of the aperture and the corresponding side of the subject support.

18. (Currently amended) A method of shielding a radiographic scanner, which has an elongated circular bore extending between first and second bore ends and surrounded by an array of radiation detectors, from radiation originating outside of the bore, the method comprising:

shaping a unitary piece of radiation opaque material into a one-piece shield with an outer periphery that closes one of the bore ends and a central non-circular aperture which mimics a cross section of a received subject; and

rigidly mounting the shield to the one bore end to permit a subject to be imaged in the scanner bore to pass into and out of the bore through the non-circular aperture,

wherein the radiographic scanner includes a subject support, which supports the subject in the bore, wherein the subject support moves vertically to raise and lower the subject in the bore and further including:

shaping a pair of opposing side boundaries of the aperture with linear and vertical regions to accommodate vertical movement of the subject support.

19. (Previously Presented) The method according to claim 18, wherein the aperture is elliptical.

20. (Currently amended) The method according to claim 18, ~~wherein the radiographic scanner includes a subject support, which supports the subject in the~~

~~bore and~~ the subject support moves the subject longitudinally into and out of the bore through the non-circular aperture, the method further including:

shaping a bottom boundary of the non-circular aperture to conform to a shape of a bottom surface of the subject support.

21. (Previously Presented) The method according to claim 20, further including:

shaping a top boundary of the aperture disposed above the subject support means arcuately with a different curvature from the bottom boundary.

Please cancel claim 22 without prejudice or disclaimer.

23. (Original) The method according to claim 18, further including:

positioning a subject on a subject support;

injecting the subject with a radiopharmaceutical;

moving the subject support to position a region of interest of the subject in an isocenter of the bore and other regions of the subject outside of the bore; and

detecting radiation from the radiopharmaceutical within the region of interest with the array of radiation detectors, while concurrently blocking radiation from the radiopharmaceutical in the regions of the subject outside the bore from reaching the radiation detectors with the radiation opaque shield.

24. (Currently amended) A diagnostic imaging system comprising:

a plurality of emission radiation detectors arranged to define an imaging region; ~~and~~

a radiation shield positioned at least one end of the imaging region, wherein said radiation shield includes a non-circular subject receiving aperture;

a subject support that supports a subject in the imaging region, wherein the subject support includes:

an upper surface that supports the subject;

a lower surface opposite the upper surface and having a shape, wherein the aperture includes an upper portion that faces the upper surface and a lower portion that faces the lower surface, the shape of the lower portion conforms to the shape of the lower surface, and the shape of the upper portion has a shape that is different from the shape of the lower surface.

25. (New) The system of claim 24 wherein the aperture includes first and second side portions that extend vertically between the upper and lower portions and the upper portion is arcuate.